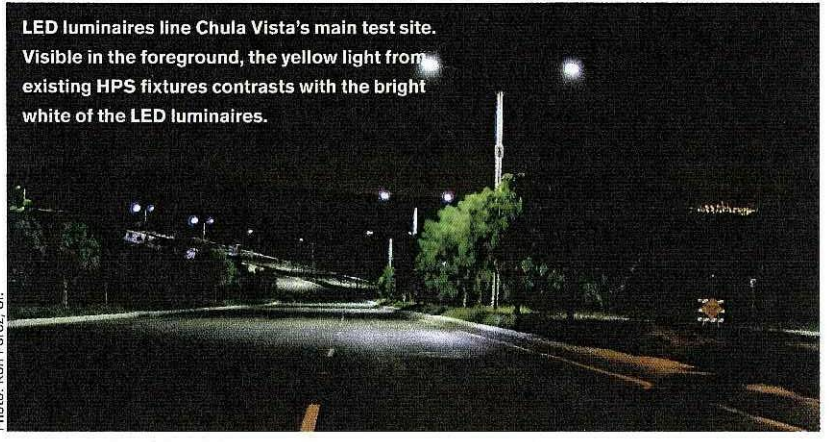

LED luminaires line Chula Vista's main test site. Visible in the foreground, the yellow light from existing HPS fixtures contrasts with the bright white of the LED luminaires.

Photo: Ken Perez, Sr.

CHULA VISTA CHOOSES LEDs

Dimming down may ensure the City of Chula Vista a brighter future. The city is evaluating adaptive controls for streetlights as part of a three-phase street lighting assessment project. A "leader in green technology," Chula Vista has a reputation for breaking new ground as an early adopter of sustainable technologies, says Turock. Controls–still a relatively new development for street lighting–may be the city's newest frontier.

In 2008, the city began testing alternatives to replace its more than 9,000 HPS streetlights, which include 100-, 150- and 250-W luminaires. While LED technology was an early frontrunner, Chula Vista also tested induction and electronic-ballast HPS fixtures along a newly constructed section of prime arterial roadway, as well as secondary residential test sites. In total, 20 LED, 10 induction and two HPS luminaires were tested.

To ensure that only the highest quality luminaires were consid-

ered for the assessment, Chula Vista developed a draft specification before the testing began. The specification requirements for LED luminaires were considerable: "One of the qualifying factors for product submission was approved IES LM-79 and LM-80 files," says Ken Perez, Sr., Nate Mullen Visual Concepts, lighting consultant for the assessment. "We required that the data be approved by an independent third-party testing facility. About 90 percent of the manufacturers interested in submitting luminaires weren't able to provide approved documentation."

LED products from several manufacturers that did provide approved files were then evaluated along with the induction and HPS systems. The luminaires were judged on performance, quality, reliability, aesthetics, serviceability, energy consumption and cost. Chief among these concerns was performance, which was measured by photometric testing that included Isolux curve comparisons. Ultimately, "the LED luminaires we tested performed better," notes Robert LeClair, City of Chula Vista, traffic devices tech supervisor and project manager. "The preferred LED luminaires are more capable (than induction) of mimicking existing HPS light patterns, and there seems to be a greater potential in terms of efficiency, controllability and energy savings."

Chula Vista is currently fine-tuning the LED specifications with the SLWG. Once completed, they will serve as regional guidelines for LED street lighting. "Sharing information is important," notes LeClair. "These technologies are new and no one really knows where they are going or where they will end up, so the more information we can share, the better." The city plans to implement LED streetlights as funding becomes available.

The final phase of the assessment involves retrofitting a sampling of the luminaires with adaptive control systems. Initially, both power-line carrier and wireless control systems were considered; however, after the power-line carrier controlled luminaires produced delayed responses, all luminaires were fitted with wireless controls. Ultimately, "the controls should enable real-time sampling and remote monitoring," says Perez. "In addition, we're using a system with alarm capabilities that identify which luminaires have problems and what kind of problems they have. From a maintenance standpoint, this is crucial for site lighting."

For all the perks that controls offer, they currently have one major drawback: "Right now, we pay our utility a flat rate that is based on the wattage per fixture," explains LeClair. "But with controls, if we can monitor the actual energy use, then they can too. We're working with the utility to make sure it's moving in that direction."

TIPS FROM A PRO

Rob LeClair, City of Chula Vista, traffic devices tech supervisor, shares where to begin when developing street lighting specifications.

Develop your specification first. Check first with your utility company or your state DOT–the entity that your specifications would default to. We started with a preliminary spec from Caltrans and also looked at specification material from the City of Los Angeles and cities in northern California. Ours is a hybrid of all of those. If you start with manufacturers, you'll have to sift through their claims. Instead, I was able to send a copy of our spec to manufacturers that claimed their LED fixtures were the latest and greatest. If their product met the spec, I'd have them send me a sample. We were able to cut out a lot of the claims right away by doing that.